OPERATION MANUAL

LAB-LINE

LAB-LINE

IMPERIAL III WATER BATH

Models

18010 & 18010-1

CONTRACT NUMBER: DLA-120-84W-8899

STOCK NUMBER: 6640-01-135-1071

LAB-LINE INSTRUMENTS, Inc.

Designers and Manufacturers
Lab-Line Plaza
Melrose Park, Illinois 60160
U.S.A.

Phone: (312) 450-2600 Telex: 6871028LBLIN UW

We are pleased with your choice of LAB-LINE INSTRUMENTS for your equipment needs. For maximum value and ease of start-up, please proceed as follows:

1. Inspect the carton and the unit for shipping damage. Notify the carrier immediately if damage is found.

2. If there is an "Accessory Check List", use it when unpacking to verify that the complete unit has been received.

3. Read this operation manual thoroughly before deciding on an appropriate location for the unit. You must consider the availability of power and/or gas hook-ups, drains and other unit requirements as well as user convenience in operation.

4. Carefully follow directions in the "Installation" section of this manual.

5. Insist that each operator of the unit is familiar with the "Operation" section of this manual.

6. Keep this manual in a safe location for ready reference to the "Operation" and "Maintenance" sections when needed.

7. If, after reading this manual, you have any difficulty installing, operating or maintaining this equipment, please call:

LAB-LINE CUSTOMER RELATIONS DEPARTMENT
800-323-0257 (outside Illinois)
312-450-2600 (inside Illinois)

CONTENTS

DESCRIPTION

LAB-LINE

IMPERIAL III WATER BATH

MODEL 18010 & 18010-1

Lab-Line's Imperial III Water Bath is ideal for serological and numerous other lab uses requiring temperature control. Strip heaters positioned beneath the bath chamber transfer heat efficiently, and a stainless steel diffuser plate on the chamber bottom helps to distribute the heat uniformly--from slightly above ambient to 65 C (100 C with a cover). Temperature uniformity is +/-.25 C.

Heat is controlled by two thermostats, one of which acts as a safety backup to prevent damage to specimens. A circuit breaker protects against shorts and overloads. Models 18010 and 18010-1 have exactly the same dimensions and performance capabilities; they differ essentially in their power requirements (120 and 240 volts AC, respectively) and in the voltage ratings of the heaters, circuit breakers and pilot lamps.

The bath chamber, seamless stainless steel with rounded corners and no holes, is easy to clean. The one-piece steel cover that overhangs the recessed front panel prevents leakage onto electrical components. The heat diffuser plate in the bottom of the Bath can be removed to add an extra inch of depth to the bath.

The Water Bath is operative without accessory equipment; optional items--test tube racks and gable cover--are available. Lab-Line's Imperial III Water Baths are U.L.-approved.

STANDARD EQUIPMENT SUPPLIED

Water Bath Thermometer Thermometer clip Manual

OPTIONAL EQUIPMENT

Test tube racks (see Specifications section)
Gable cover (Model 18010-2 or 180110-4)

SPECIFICATIONS

ELECTRICAL REQUIREMENTS

MODEL 18010. . . . .1520 W, 120 V, 50/60 Hz

MODEL 18010-1. . . .1520 W, 240 V, 50/60 Hz

TEMPERATURE RANGE

Slightly above room ambient to 100 C (with cover)

TEMPERATURE CONTROL

+/-0.5 C

TEMPERATURE UNIFORMITY

+/-0.25 C

HEATUP TIMES

Time to Reach 37 C from Ambient*	Time to Reach Boiling (100 C) from Ambient*
27 minutes	3 hours

WORKING CHAMBER DIMENSIONS

28"L x 16"W x 7"D
(71.1 x 40.6 x 17.8 cms)

*From 25 degrees C. Data based on interior chambers half-filled and covered.

OVERALL DIMENSIONS

32 1/8"L x 22 3/8"W x 11"H
(81.6 x 56.8 x 27.9 cms)

CAPACITY -- TEST TUBE

40 Tube Wasserman No. 55050	28 Tube Army No. 56120	20 Tube Army No. 56100	48 Tube Kolmer No. 56105	30 Tube Kahn No. 56111
8	12	17	8	11

WEIGHT

65 lbs
(29.5 kgs)

INSTALLATION

INSPECTION

The Imperial III Water Bath was carefully packed to prevent damage during shipment. Upon receipt of the unit, inspect it, its accessories and the shipping carton for damage. If any damage to the Water Bath or accessories is discovered, file a claim with the carrier and notify your supplier immediately.

STORAGE

If the unit is to be stored, rewrap it with the accessories in the polyethylene bag in which it was shipped and replace it in the shipping carton. Tape the carton shut.

See the Maintenance section for details on storage.

SETUP

Place the Water Bath on the table or bench where it is to be operated. It should be in a level position, though this is not necessary for operation, and it should be out of direct drafts unless a gable cover is used.

Fill the water compartment with water, preferably distilled or chemically softened, to within one inch from the top.

Insert the power switch to the off position and plug the power cord into a suitable outlet (see the power requirements on the unit's nameplate or in the Specifications section of this manual.

OPERATION

CONTROLS

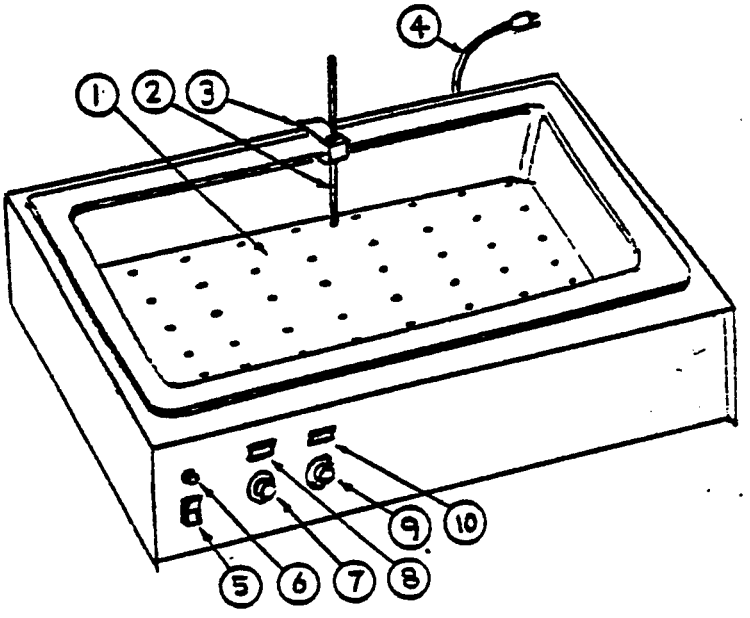
The Water Bath is regulated by two controls located on the front panel:

1. The control thermostat; and
2. The safety thermostat.

Both controls have a graduated dial and pilot light. These dials, however, do not indicate temperature directly--their settings are for reference only.

FIGURE 1
LAB-LINE MODEL 18010/18010-1 WATER BATH

1. Heat diffuser plate
2. Thermometer, 0-100 C
3. Thermometer holder
4. Power cordset
5. Power switch
6. Overload (circuit breaker)
7. Thermostat--control
8. Pilot lamp--control thermostat
9. Thermostat--safety
10. Pilot lamp--safety thermostat



SETTING THE TEMPERATURE

> CAUTION: Do not operate the unit without water in the water compartment.

To set the Bath temperature:

1. Turn the power switch on.
2. Rotate the safety knob clockwise to its maximum setting.
3. Rotate the control knob to a setting that will provide the approximate desired temperature. The setting must be estimated and adjustments made later as required.
4. Turn the safety knob counterclockwise until the safety lamp goes on and the control lamp goes off. Then turn the safety knob clockwise slowly until its lamp goes off again; continue in the same direction for two or three minor divisions on the knob.
5. Allow 30 minutes for the oven temperature to stabilize. If the temperature must be adjusted, change the settings as described above in steps 2 and 3.

   NOTE: Each time the control knob is reset, there must be an accompanying adjustment in the safety control.

   The control lamp will be on when the Bath is heating. It will be off and the safety lamp on when the Bath is not heating.

TROUBLESHOOTING

PROBLEM	DIAGNOSIS
1. Unit is nonoperative.	A. Unit is not plugged in or not plugged into proper outlet. B. On/off switch is in off position.
2. Unit does not heat up.	A. Unit is not plugged in or not plugged into proper outlet. B. On/off switch is in off position. C. One of thermostats or both are set at 0. D. Faulty heater. E. Faulty thermostat.
3. Temperature will not increase as control knob is turned clockwise.	A. Safety thermostat must be adjusted for every different setting.
4. Safety lamp is on.	A. Safety thermostat has activated safety lamp, indicating heater has been turned off because water temperature is higher than desired setting.

MAINTENANCE

Make no attempt to service or repair a Lab-Line product under warranty before consulting your Lab-Line distributor. After the warranty period, such consultation is still advised, especially when the repair may be technically sophisticated or difficult.

If assistance is needed beyond what the distributor can provide, please call the Lab-Line Customer Relations Department at 312-450-2600.

No merchandise, however, should be returned directly to Lab-Line without prior written approval.

Regular cleaning and drying of the unit during periods of use will provide extra protection against corrosion. Use a household cleanser, not harsh abrasives. Likewise, do not use wire brushes or sharp-edged implements.

Other than cleaning, there is no periodic maintenance. There are electronic components, however, that may need to be replaced eventually--namely, the heaters, thermostats, power switch, pilot lamps, or circuit breaker.

Figures 2 and 3 show the relative positions of all components in the Water Bath.

STORAGE

As shipped from the Lab-Line factory, the 18010/18010-1 Water Bath and accessories are wrapped in a polyethylene bag and boxed in a cardboard carton. The carton is made of commercial grade, double-walled cardboard (strength: RSC 275). Cardboard spacers on the Bath's four sides provide a snug fit and buffer against shock.

After the Water Bath has been inspected, as described in the Installation section, it can be repacked as it was originally if it is to be stored. Be sure the thermometer, thermometer clip, the manual and any other accessory are included. Tape the covers shut.

INDOOR STORAGE: Store the unit in an area where it will be protected against flooding, seepage or moisture.

Temperatures from freezing to 100 F (38 C) will cause no damage to the unit.

OUTDOOR STORAGE: The Water Bath, while packed only in the original cardboard shipping carton, should not be stored outdoors.

INSPECTION DURING STORAGE

No inspection during storage will be necessary, provided the ambient conditions as described for indoor storage are maintained.

HEATER CHECK

1. A unit that heats does not reach the desired temperature within its operating range, even with the control thermostat fully advanced, probably has a defective heater or heaters.

2. Tools needed: Phillips screwdriver, flatblade screwdriver, ohmmeter.

Disconnect electrical power to the heater.

3. Remove the thermometer and water, if any, from the Bath.

4. Remove the screws in the bottom cover plate, then remove the cover. (See Figure 3.)

5. Push aside the thermal insulation covering the heaters on the bottom of the Bath's pan. Disconnect the wire or wires from one terminal of one heater. Connect an ohmmeter across that heater's two terminals. The resistance reading should be approximately

   9 ohms for a 120-volt, 1520-watt heater, and
   38 ohms for a 240-volt, 1520-watt heater.

6. If the resistance is considerably more than the above values, such that the wattage of the heater is markedly reduced (as can be computed by Ohm's law--power = voltage squared divided by the heater resistance), replace the heater.

   Perform the same check on the other heaters and replace any one that is defective.

HEATER REPLACEMENT

1. Tools needed: Phillips screwdriver, flatblade screwdriver, pliers.

Be sure electrical power to the unit is disconnected.

2. Identify the defective heater or heaters, as described above in Heater Check.

3. Make a sketch of the heater wiring for reference when rewiring. Remove the two screws holding the wires to the heater terminals.

4. Remove the nuts and washers holding the heater support plate, then remove the the plate and the heater. (See Figure 3.)

HEATER INSTALLATION

1. Tools needed: Phillips screwdriver, flatblade screwdriver, pliers.

2. Remove the heater as described above in Heater Removal.

3. To the replacement heater, apply heat transfer compound (e.g., Dow Corning No. 342) to the side that will make contact with the water pan.

4. Position the heater and heater support plate on the three mounting studs and fasten with the original washers and nuts.

5. Reattach the electrical wires to the heater terminals.

6. Cover the heaters with the thermal insulation.

7. Install the bottom cover plate.

THERMOSTAT CHECK

1. With water in the pan, turn the unit on.

2. Set the safety thermostat fully clockwise.

3. Set the control thermostat fully clockwise and allow approximately 30 minutes for the temperature to stabilize. Record the temperature of the water.

4. Reset the control thermostat at about the halfway point and allow for temperature stabilization. Record the temperature of the water.

5. If adjusting the control thermostat has no effect on the Water Bath's temperature, the control thermostat is probably defective and should be replaced.

NOTE: If there is no heatup at all, suspect a safety thermostat. The safety lamp should be on constantly if this is the problem.

THERMOSTAT REMOVAL

Disconnect electrical power to the unit.

1. Remove the thermometer and water, if any, from the Bath.
2. Loosen the two set screws in the thermostat's knob and remove the knob.
3. Remove the unit's bottom cover plate.
4. Make a sketch of the wiring to the defective thermostat. It is advisable to attach a label to the wires to facilitate proper rewiring.
5. Remove the nuts holding the wires to the thermostat and remove the wires.
6. Unscrew the two screws in the front panel that hold the thermostat.
7. Slide the thermostat bulb from the bulb clip. Remove the thermostat.

THERMOSTAT INSTALLATION

1. Reverse the above removal instruction, using the replacement thermostat.

FIGURE 2
CONTROL PANEL VIEWED FROM REAR

4. Power cordset
5. Power switch
6. Power pilot lamp
7. Thermostat--control
8. Pilot lamp--control thermostat
9. Thermostat--safety
10. Pilot lamp--safety thermostat
13. Heaters
20. Wire splice nut
21. Electrical ground nut

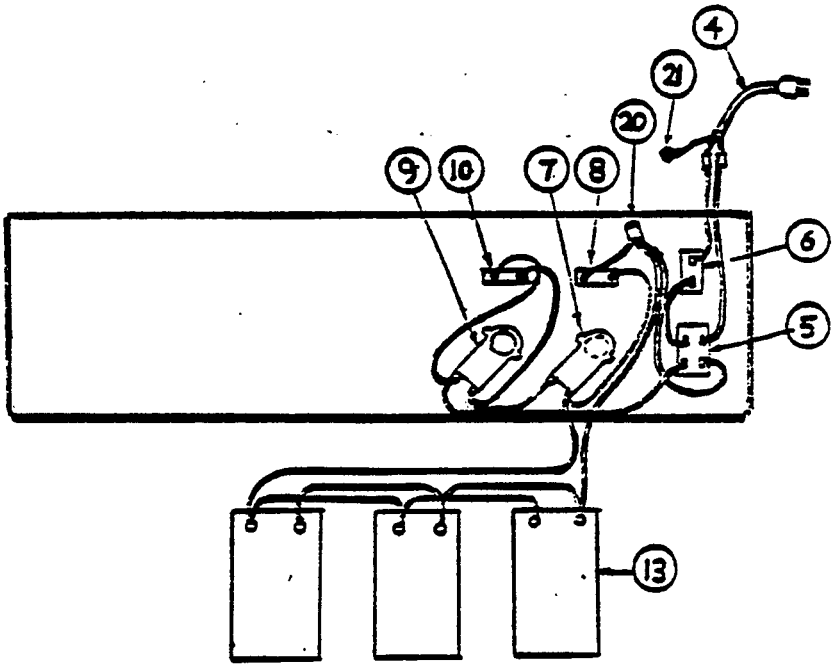
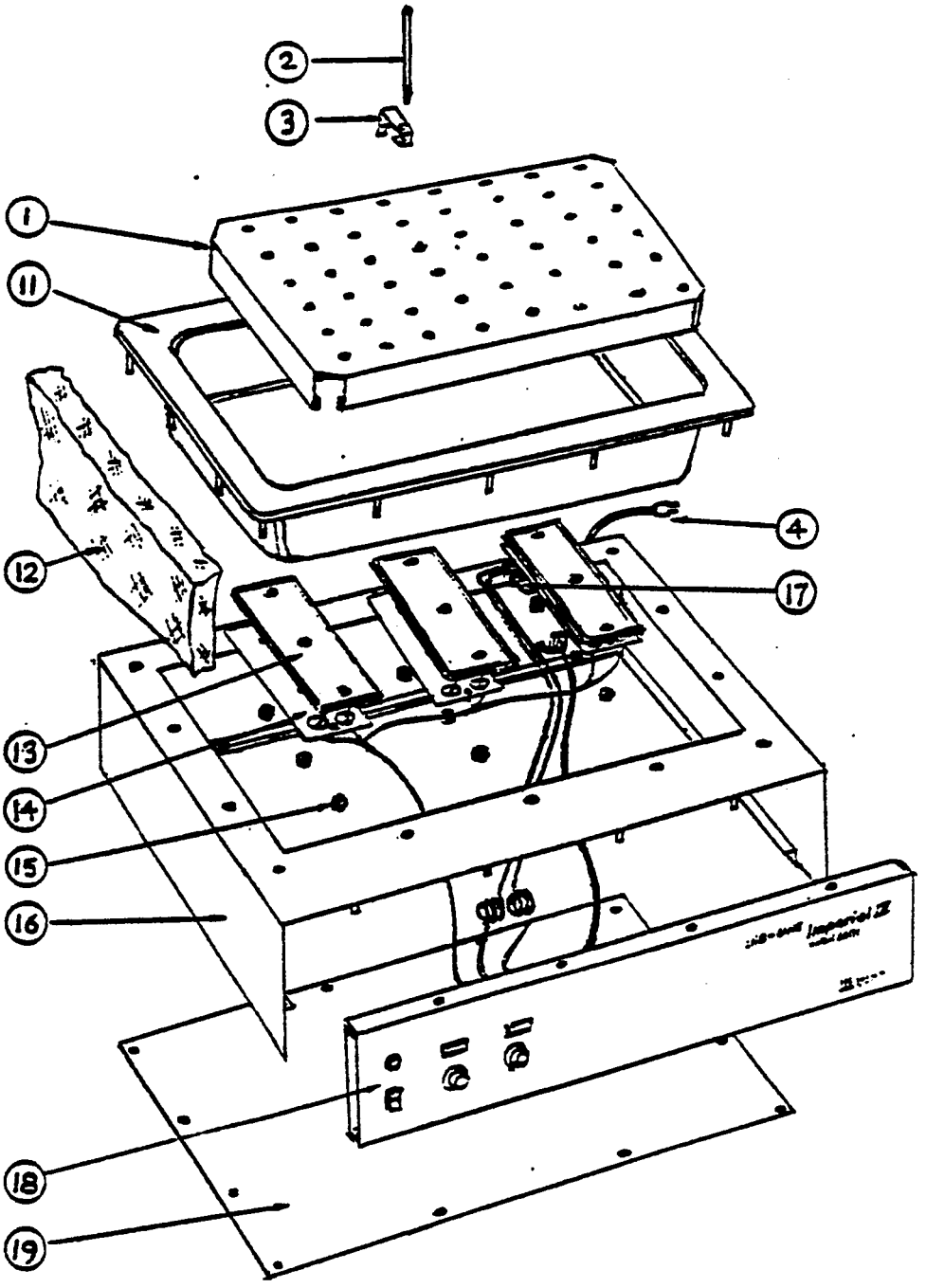


FIGURE 3
EXPLODED VIEW OF THE MODEL 18010/18010-1 WATER BATH

1. Heat diffuser plate
2. Thermometer, 0-100 C
3. Thermometer holder
4. Power cordset
11. Bath pan
12. Thermal insulation
13. Heaters
14. Heater support plate
15. Nut (6-32)
16. Outer body
17. Thermostat bulb clip
18. Control panel
19. Bottom cover plate

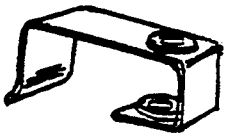
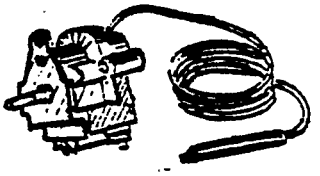
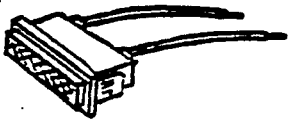
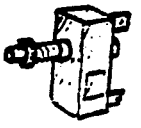


REPLACEMENT PARTS

REFERENCE NUMBER FIG. 2 & 3	PART	PART NUMBER
	Circuit breaker	
6	on Model 18010 (120 V, 15 A)	330-124-00
6	on Model 18010-1 (240 V, 10 A)	330-119-00
17	Clamp, Thermostat bulb	
4	Cordset	470-105-00
	Heater, 500 W	
13	on Model 18010, (3 used)	340-183-00
13	on Model 18010-1 (3 used)	340-185-00
	Lamp, Pilot	
8	on Model 18010 (red,* 120 V)	360-146-00
10	on Model 18010 (amber,* 120 V)	360-164-00
8, 10	on Model 18010-1 (amber,* 240 V)	360-147-00
5	Switch, On-off	440-098-00
2	Thermometer	910-003-00
3	Thermometer Bracket	584-097-00
	Thermostat	
7	Control (on 18010 & 18010-1)	920-232-00
9	Safety (on 18010 & 18010-1)	920-232-00

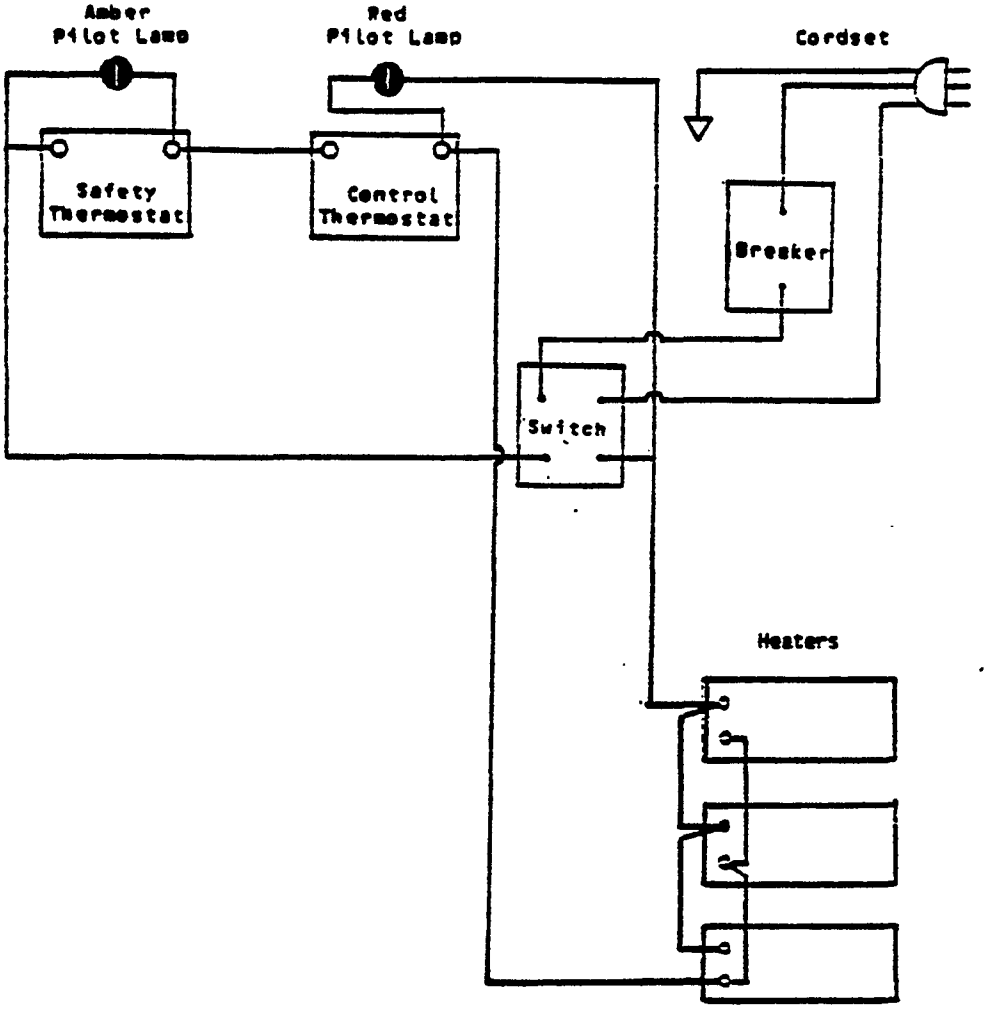
*On 120-volt units, the control pilot lamp is red and the safety pilot lamp is amber. On 240-volt units, each lamp is amber.

FIGURE 4
MAJOR COMPONENTS IN MODEL 18010/18010-1 WATER BATH

Ref. No. 2	Thermometer, 0-100 C	1 ea.	
Ref. No. 3	Thermometer bracket	1 ea.	
Ref. No. 13	Heater 500 watts	3 ea.	
Ref. No. 7 Ref. No. 9	Control thermostat Safety thermostat	1 ea. 1 ea.	
Ref. No. 8 Ref. No. 10	Control lamp (red*) Safety lamp (yellow)	1 ea. 1 ea.	
Ref. No. 5	Power switch	1 ea.	
Ref. No. 6	Circuit breaker 15 amps	1 ea.	
Ref. No. 4	Cordset	1 ea.	

*On 120-volt units, the control pilot lamp is red and the safety pilot lamp is amber. On 240-volt units, each lamp is amber.

WIRING


Amber
Pilot Lamp
Red
Pilot Lamp
Cordset
Safety
Thermostat
Control
Thermostat
Breaker
Switch
Heaters

FIRST IN INSTRUMENTS
SERVING SCIENCE, INDUSTRY, RESEARCH AND EDUCATION
SINCE 1908